



Natural Ventilation in Building using Attic and Solar Chimney

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Abstract : A new solar-induced technique for air ventilation in building is proposed, wherein transparent roof and chimney are employed to induce high volume air flow to ventilate the building as well as to cool human dwellers. The driving force for the flow is the buoyancy created by the attic room under a transparent roof. The flow is further enhanced by the chimney attached to the top of the roof. Computational fluid dynamics program was used to simulate the mentioned air flow at various significant parameters such as, roof inclinations, chimney heights, solar intensities and roof shapes. It was found that reasonable air flow rates were achieved that could result into comfortable living conditions in the rural area of the Tropic.

Keywords: Natural ventilation, Natural cooling, Solar chimney, Solar attic